

Factoring Conclusion

Remember: Most trinomials CANNOT be factored!!

When factoring a quadratic, perform the following steps:

1. Look for common factors and factor them out.

$$\text{eg: } 3x^2 + 9x + 6 = 3(x^2 + 3x + 2)$$


common factor

2. Look for "Difference of Squares"

$$9x^2 - 25 = (3x + 5)(3x - 5)$$


something squared something squared
negative sign

3. Look for "Perfect Squares"

$$4x^2 + 12x + 9$$


something squared something squared
2 x (sum of the two somethings)

4. Is it a monic trinomial? (ie, coefficient of x is 1)

$$x^2 + 3x + 2 = (x + 2)(x + 1)$$

in $x^2 + bx + c$, look for two numbers that add to b and multiply to c

5. Is it a complex trinomial? (ie, coefficient of x is NOT 1)

$$2x^2 + x - 6 = (2x - 3)(x + 2)$$

in $ax^2 + bx + c$, look for two numbers that add to b and multiply to $a \times c$, then use decomposition to factor.